

APPENDIX A-1. LARGE TREES FOR HOUSTON

<i>Botanical Name</i>	<i>Common Name*</i>	<i>Comments</i>
<i>Acer rubrum</i> var <i>drummondii</i>	D Drummon Red Maple	Wet sites
<i>Acer rubrum</i> var <i>tridens</i>	D Trident Red Maple	Wet sites
<i>Acer barbatum</i>	D Southern or Texas Sugar Maple	
<i>Betula nigra</i>	D River Birch	Wet sites
<i>Bumelia lanuginosa</i>	D Chittamwood, Gum bumelia or Wooly Bucket	Drought-tolerant/Attracts birds
<i>Carya cordiformis</i>	D Bitternut Hickory	
<i>Carya illinoenses</i>	D Pecan	Nut
<i>Carya texana</i>	D Black Hickory	Drought-tolerant
<i>Carya tomentosa</i>	D Mockery Nut Hickory	Fruit
<i>Diospyros virginiana</i>	D Persimmon, eastern	Fruit
<i>Ehretia anacua</i>	D Anacua	Flowering/Fruit/Drought-tolerant
<i>Fraxinus americana</i>	D White Ash	
<i>Fraxinus Pennsylvanica</i>	D Green Ash	
<i>Ginkgo biloba</i>	D Ginkgo	Male only
<i>Ilex opaca</i> (and cultivars)	E American Holly	Female/Fruit
<i>Juglans nigra</i>	D Black Walnut	
<i>Liquidambar styraciflua</i>	D Sweetgum	Fall color
<i>Liriodendron tulipifera</i>	D Tulip tree or Yellow Poplar	Flowering/Wet sites
<i>Magnolia grandiflora</i>	E Southern Magnolia	Flowering
<i>Magnolia virginiana</i>	E Sweet Bay Magnolia	Flowering/Wet sites
<i>Metasequoia glyptostroboides</i>	D Dawn Redwood	
<i>Nyssa aquatica</i>	D Water tupelo	Wet sites
<i>Nyssa sylvatica</i> var <i>biflora</i>	D Swamp tupelo or Black Gum	Wet sites
<i>Nyssa sylvatica</i> var <i>sylvatica</i>	D Black Gum	Fruit/Fall color
<i>Pinus palustris</i>	E Longleaf Pine	
<i>Pinus taeda</i>	E Loblolly Pine	
<i>Pinus glabra</i>	E Spruce Pine	
<i>Plantanus mexicana</i>	D Mexican Sycamore	Wet sites
<i>Plantanus occidentalis</i>	D Sycamore	
<i>Prunus serotina</i>	D Black Cherry	Flowering/Fruit
<i>Quercus acutissima</i>	D Sawtooth Oak	
<i>Quercus alba</i>	D Oaks, white	Fall color
<i>Quercus canbii</i>	D Canby Oak	
<i>Quercus falcata</i>	D Southern Red Oak	
<i>Quercus laurifolia</i>	D Laurel Oak	
<i>Quercus lyrata</i>	D Overcup Oak	Wet sites
<i>Quercus macrocarpa</i>	D Bur Oak	Wet sites/Drought-tolerant
<i>Quercus michauxii</i>	D Swamp Chestnut Oak	Fall color
<i>Quercus muehlenbergii</i>	D Chinkapin Oak	Drought-tolerant
<i>Quercus nutallii</i>	D Nutall Oak	Fall color/Wet sites
<i>Quercus palustris</i>	D Pin Oak	Fall color

*D means deciduous; and E means evergreen.

<i>Botanical Name</i>	<i>Common Name*</i>	<i>Comments</i>
<i>Quercus phellos</i>	D Willow Oak	
<i>Quercus polymorpha</i>	D Monterrey Oak	
<i>Quercus rizophyllia</i>	D Loquat Leaf Oak	
<i>Quercus shumardii</i>	D Shumard Oak	Fall color
<i>Quercus stellata</i>	D Post Oak	
<i>Quercus virginiana</i>	D Live Oak	
<i>Sassafras albidum</i>	D Sassafras	Fall color/Attracts birds
<i>Taxodium distichum</i> var <i>distichum</i>	D Bald Cypress	Wet sites/Drought-tolerant
<i>Taxodium distichum</i> var <i>nuttans</i>	D Pond Cypress	
<i>Taxodium mucronatum</i>	D Montezuma Bald Cypress	
<i>Tilia caroliniana</i>	D Carolina Basswood	
<i>Ulmus americana</i>	D American Elm	
<i>Ulmus alata</i>	D Winged Elm	
<i>Ulmus crassifolia</i>	D Cedar Elm	Drought-tolerant
<i>Ulmus parvifolia</i> var <i>drakii</i>	D Drake Elm	
<i>Zelkova serrata</i>	D Japanese Zelkova	

*D means deciduous; and E means evergreen.

APPENDIX A-2. SMALL TREES FOR HOUSTON

<i>Botanical Name</i>	<i>Common Name*</i>	<i>Comments</i>
<i>Acer leucoderme</i>	D Chalk Maple	Fall color
<i>Acacia wrightii</i>	D Wright Acacia	Flowering/Drought-tolerant
<i>Aesculus pavia</i> var <i>pavia</i>	D Red Buckeye	Flowering
<i>Aesculus pavia</i> var <i>flavescens</i>	D Red Buckeye	Yellow flowers
<i>Aesculus glabra</i> var <i>arguta</i>	D White Buckeye	Flowering/Drought-tolerant
<i>Asimina triloba</i>	D Pawpaw	Flowering/Fruit
<i>Bauhinia congesta</i>	D Anacacho Orchid Tree	Flowering/Drought-tolerant
<i>Carpinus caroliniana</i>	D American Hornbeam, Iron-wood or Blue Beech	Wet sites/Fall color
<i>Cercis canadensis</i>	D Eastern Redbud	Flowering
<i>Cercis canadensis</i> var <i>texensis</i> cultivars	D Texas Redbud	Flowering/Drought-tolerant
<i>Cercis canadensis</i> var <i>mexicana</i>	D Mexican Redbud	Flowering/Drought-tolerant
<i>Chionanthus virginicus</i>	D Fringe Tree	Flowering/Attracts birds
<i>Chionanthus retusus</i>	D Chinese Fringe Tree	Flowering/Drought-tolerant
<i>Cornus florida</i>	D Flowering Dogwood	Flowering/Attracts birds
<i>Cotinus obovatus</i>	D American Smoke Tree	Fall color/Drought-tolerant
<i>Crataegus marshallii</i>	D Parsley Leaf Hawthorn	Flowering/Attracts birds
<i>Crataegus opaca</i>	D May Haw	Flowering/Fruit/Attracts birds
<i>Crataegus spathulata</i>	D Little Hip Hawthorn	Flowering/Attracts birds
<i>Crataegus viridis</i>	D Green Hawthorn	Flowering
<i>Crataegus texana</i>	D Texas Hawthorn	Flowering
<i>Crataegus reverchonii</i>	D Reverchon Hawthorn	Flowering
<i>Cyrilla racemiflora</i>	D Titi	Wet sites
<i>Diospyros texana</i>	D Texas Persimmon	Fruit/Drought-tolerant
<i>Eysenhardtia texana</i>	D Texas Kidneywood	Flowering/Drought-tolerant
<i>Halesia diptera</i>	D Two-winged Silverbell	Flowering
<i>Ilex cassine</i>	E Dahoon Holly	Female-Fruit/Attracts birds
<i>Ilex decidua</i>	D Possum Haw	Female-Fruit/Attracts birds
<i>Ilex vomitoria</i>	E Yaupon	Female-Fruit/Attracts birds
<i>Malus angustifolia</i>	D Southern Crabapple	Flowering/Fruit
<i>Myrica cerifera</i>	E Southern Wax Myrtle	Wet sites/Attracts birds
<i>Ostrya virginiana</i>	D Eastern Hop Hornbeam	
<i>Parkinsonia aculeata</i>	D Retama	Flowering/Drought-tolerant
<i>Pistacia chinensis</i>	D Chinese Pistachio	Fall color/Drought-tolerant
<i>Pistacia texana</i>	D Texas Pistache	Drought-tolerant
<i>Prosopis glandulosa</i> var <i>glandulosa</i>	D Mesquite	Drought-tolerant
<i>Prunus mexicana</i>	D Mexican Plum	Flowering/Fruit/Drought-tolerant
<i>Prunus umbellata</i>	D Flatwoods Plum	Flowering/Fruit
<i>Prunus angustifolia</i>	D Creek Plum	Flowering/Fruit

*D means deciduous; and E means evergreen.

<i>Botanical Name</i>	<i>Common Name*</i>	<i>Comments</i>
Rhamnus caroliniana	D Carolina Buckthorn	Fall color/Fruit/Attracts birds/ Drought-tolerant
Rhus copallina	D Sumac	Fall color
Sophoria secundiflora	E Texas Mountain Laurel	Flowering/Drought-tolerant
Sophora affinis	D Eve's Necklace	Flowering
Ungnadia speciosa	D Mexican Buckeye	Flowering/Drought-tolerant
Viburnum rufidulum	D Rusty Black Haw Viburnum	Flowering/Fall color/Drought- tolerant/Attracts birds

*D means deciduous; and E means evergreen.

APPENDIX A-3. RESERVED*

***Editor's note**—Ord. No. 03-159, § 8, repealed Ch. 33, Art. V, App. A-3. in its entirety. Formerly said appendix pertained to department of parks and recreation street trees and derived from Ord. No. 01-181, § 3, 2-21-01.

APPENDIX B. TREE PLANTING

- I. *Tree selection.* Trees planted under section 33-108 must be selected from the street trees list (Appendix A-3). All plant stock shall meet the Standard for Nursery Stock Specifications, as established by the American Association of Nurserymen (1986 ed.) on file in the office of the city secretary.

The following factors should be considered in the selection of trees from the tree and shrub lists, Appendices A-1, A-2, A-3, and D:

- A. Hardiness of trees for the specific site, i.e., soil conditions, pH, drainage.
- B. Mature plant size, form and growth rates, i.e., proximity to overhead utility lines.
- C. Drought tolerance.
- D. Pest and insect resistance.

- II. *Tree planting:*

- A. Holes for the trees should be excavated one and one-half (1½) to two (2) feet greater in width than the diameter of the soil ball. The sides of the hole should be vertical and the bottom horizontal. Trees should be planted with the top of the root ball two (2) inches above existing grade. No holes should be left uncovered overnight.
- B. Trees should be set in an upright plumb position at depth two (2) inches higher than grown in the container. Care should be taken so as not to injure the root system, trunk, or foliage. The trunk should not be used as a lever in positioning or moving the tree in the planting hole.
- C. The backfill should consist of topsoil excavated from the planting hole. If there is not enough topsoil, a supplement of similar topsoil should be furnished. Each planting hole should be backfilled and tamped lightly so as not to damage roots. A saucer should be constructed six (6) to eight (8) inches above soil grade around the planting hole and should be a minimum of six

(6) feet in diameter, free of weeds and grass.

- D. Any pruning should be done according to the standards of the National Arborist Association (rev. 1988) (The Meeting Place Mall, Route 101, P.O. box 1094, Amherst, NH 03031), on file in the office of the city secretary. All damaged limbs should be removed. The tree should be maintained in a shape appropriate to its species. Street trees should be pruned in accordance with the standards for hazard pruning contained in class III.
- E. Trees planted hereunder should be staked with a minimum of two (2) stakes, eight (8) feet long, attached to the tree with plastic tree chain, one (1) inch in size, or equivalent, in a manner that is secure and will not injure the tree. Any one-hundred-gallon trees should be tri-staked (three (3) stakes). Other types of securing ties or devices may be used if designed for that purpose.
- F. Mulch shall be placed loosely around trees planted hereunder within twenty-four (24) hours after planting to a uniform depth of three (3) to four (4) inches and to a diameter of six (6) feet. No leaves, branches, roots or other foreign material may be used as a mulch. This area should be maintained free of weeds and grass vegetation with a three (3) to four (4) inch mulch cover for a minimum period of one (1) year.

- III. *Watering.* The following watering schedule may be utilized and revised during prolonged periods of rain or drought.

Initial	Root zones should
Watering	be slow-soaked
After	every seven (7) days
Planting	for four (4) weeks.

November
December
January
February

In the absence of
sufficient rainfall,
root zones should be
slow-soaked on a
twenty-one-day
water schedule.

October
March
April

In the absence of
sufficient rainfall,
root zones should be
slow-soaked on a
fourteen-day water
schedule.

May
June
July
August
September

In the absence of
sufficient rainfall,
root zones should be
slow-soaked on a
seven-day watering
schedule.

APPENDIX C. TREE PROTECTION**(a) General procedures.**

- (1) Trees to be preserved must be clearly tagged in the field with ribbon.
- (2) Tree wells shall be made of a durable material and set a minimum of four (4) feet from any tree they are designed to protect.
- (3) Retaining walls of a durable material, i.e., stone, or treated lumber, are to be constructed around each tree immediately after the grade is lowered. A retaining wall must be at least four (4) feet from the tree it is designed to preserve.
- (4) Any understory clearing within six (6) feet of existing tree trunks should be done by hand.
- (5) No building materials are to be stacked or stockpiled within the dripline or within six (6) feet of any tree to be preserved, whichever is greater.
- (6) Topsoil shall not be stockpiled within the dripline or within six (6) feet of any tree to be preserved, whichever is greater.
- (7) Selective thinning of dead or dying vegetation, tree stumps and other undesired growth is required in buffer areas. Supplemental vegetation shall comply with the landscape buffer requirements of this article.

(b) *Tree protection zones.* Tree protection zones shall be established prior to construction. During construction a barrier shall be maintained at all times between the tree and the work areas. The barrier shall be composed of wood, wire, snowfence and braces of similar noninjurious material. These areas shall be clearly marked with signs stating "tree protection zone." In tree protection zones the following restrictions shall apply:

- (1) No soil compaction from vehicular traffic and material storage.
- (2) No trunk and limb damage from equipment, nailing, bolting and guying.
- (3) No poisoning from pouring of concrete, lime, paint thinner and other soil contaminants.

- (4) No roof suffocation or damage to roots from fill soil or grade change.
- (5) No improper pruning or trimming of branches. Pruning should be done in accordance with the standards of the National Arborist Association (rev. 1988) on file in the office of the city secretary. Street trees should be pruned in accordance with the standards for hazard pruning contained in class III of those standards.

(c) Maintenance in tree protection zones.

- (1) A watering and monitoring schedule for tree protection zones should be implemented to compensate for damage to existing root systems. Trees should be watered at intervals that provide sufficient water during periods of drought, and waterings should be suspended during periods of heavy rainfall. Tree root systems should be drenched and allowed to dry.

November
December
January
February

In the absence of sufficient rainfall, root zones should be drenched every twenty-one (21) days.

October
March
April
May

In the absence of sufficient rainfall, root zones should be drenched every fourteen (14) days.

June
July
August
September

In the absence of sufficient rainfall, root zones should be drenched every seven (7) days.

- (2) Trees shall be fertilized annually. A 3 to 1 ratio of nitrogen, phosphorus, and potassium ("NPK") containing a slow-release, nonburning nitrogen should be applied according to manufacturer's instructions.

(d) Permitted activities in tree protection zones.

- (1) *Specially designed sidewalks.* Sidewalks are permitted if laid on top of the existing grade with fill placed at the sides. Sidewalks shall not be cut into the ground.

- (2) *Utility lines.* Utility lines shall be tunneled beneath tree roots in order to protect feeder roots, rather than trenched or open cut.
- (3) *Sodding and ground cover.* Placement of sod or other ground cover and the preparation of ground surface for such cover is permitted. No tilling of the soil shall be allowed.

APPENDIX D. SHRUB LIST

*Expected
Height
After 3
Years
(in feet)*

*Common Name
Evergreens*

Botanical Name

1-3	Japanese Boxwood	Buxus microphylla japonica
1	Dwarf Euonymus	Euonymus japonica "Microphylla"
2-3	Silver King Euonymus	Euonymus japonica "Silver King"
1-2	Dwarf Gardenia	Gardenia jasminoides "Radicans"
2-3	Dwarf Burford Holly	Ilex cornuta "Burfordii Nana"
2-3	Dwarf Chinese Holly	Ilex cornuta "Rotunda"
1-2	Compact Japanese Holly	Ilex crenata "Compacta"
1-3	Dwarf Yaupon Holly	Ilex vomitoria "Nana"
1-2	Primrose Jasmine	Jasminum mesnyi
3-4	Texas Sage	Leucophyllum Frutescens
3-4	Dwarf Wax Myrtle	Myrica cerifera
1	Dwarf Purply Nandina	Nandina domestica nana "Purpurea"
2-3	Harbor Dwarf Nandina	Nandina domestica nana "Harbor Dwarf"
2-3	Dwarf Oleander	Nerium oleander
1-2	Turner's Dwarf Pittosporum	Pittosporum tobira "Turner's Dwarf"
1-2	Wheeler's Dwarf Pittosporum	Pittosporum tobira "Wheeler's Dwarf"
3-4	Fraser's Photinia	Photinia x fraseri
2-3	Red Elf Pyracantha	Pyracantha "Red Elf"
2-4	Indian Hawthorne	Raphiolepis indica
2-3	Red Spirea	Spiraea x bumalda "Anthony Waterer"
3-4	Spring Bouquet Vib	Viburnum tinus "Spring Bouquet"
6	Red Tip Photina	Photinia glabra
6	Chinese Photina	Photinia serrulata
6	Waxleaf Ligustrum	Ligustrum japonicum
6	Southern Wax Myrtle	Myrica cerifera

APPENDIX E. SHRUB PLANTING

I. *Shrub selection.* Shrubs planted in public rights-of-way shall be selected from the parks and recreation department perennial shrub list (Appendix D). Shrubs planted in other areas may also be selected from that list.

The following factors should be considered when making a selection from the shrub list for planting:

- A. Hardiness for the specific site selected.
- B. Present and ultimate size, branching habits, and growth rate. The plant shall be at least eighteen (18) inches in height as measured from the surrounding soil line, shall have a minimum eighteen-inch width at the widest portion when planted and shall be capable of growth to not less than thirty (30) inches in height as measured from the surrounding soil line within three (3) annual growing seasons.
- C. Resistance to pests.

II. *Shrub planting.*

- A. Holes for shrubs should be excavated six (6) inches greater in width than the diameter of the soil ball. The sides of the hole should be vertical and the bottom horizontal. Shrubs should be planted with top of root ball slightly above existing grade. No holes should be left uncovered overnight.
- B. Shrubs should be set in an upright plumb position at a depth slightly higher than grown in the container. Care should be taken not to injure the root system, trunk, or foliage. The trunk should not be used as a lever in positioning or moving the shrub in the planting hole.
- C. Holes should be backfilled with soil and tamped lightly and carefully so as not to damage roots. The shrub should be watered to settle soil around the roots and remove air pockets.
- D. All damaged branches shall be removed.
- E. A minimum three-inch layer of mulch shall be placed loosely at the base to retard weed growth and conserve moisture.

III. *Watering.* The following water schedule may be utilized and revised during prolonged periods of rain or drought.

Initial Watering After Planting	Root zones should be drenched every seven (7) days for four (4) weeks.
November December January February	In the absence of sufficient rainfall, root zones should be drenched on a twenty-one-day watering schedule.
October March April	In the absence of sufficient rainfall, root zones should be drenched on a fourteen-day watering schedule.
May June July August September	In the absence of sufficient rainfall, root zones should be drenched on a seven-day watering schedule.

APPENDIX F. LANDSCAPE UNIT COSTS

The following are to be used as installed prices for bonding and deposits purposes, and shall be subject to a cost adjustment.

Trees:

15-gallon container.....	\$100.00
30-gallon container.....	225.00
2" -2.5" caliper, B & B.....	200.00
2.5" -3" caliper, B & B.....	275.00
4" caliper, B & B.....	450.00
6" caliper, machine planted.....	650.00
8" caliper, machine planted.....	900.00

Shrubs and Vines:

1-gallon container.....	\$ 4.50
2-gallon container.....	15.00
5-gallon container.....	18.00

Mulch (for beds):

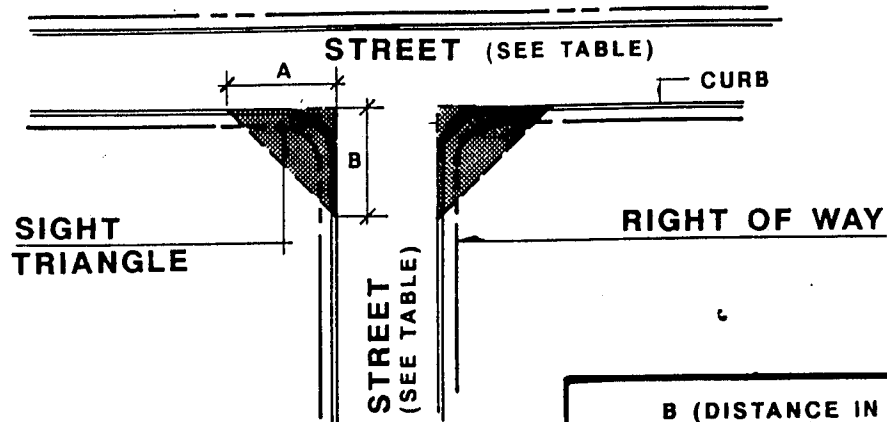
Shredded pine bark, per cubic yards	\$35.00
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Fence:

6' high #1 cedar batten board fence, per linear foot	\$11.00
Gate, each.....	\$50.00

FIGURE A

Sight Visibility Triangles



**TYPICAL REQUIREMENTS
BY STREET TYPE
(MEASURED ALONG THE CURB FACE)**

A (DISTANCE IN FEET)		B (DISTANCE IN FEET)	
		LOCAL STREET OR ALLEY	MAJOR THROUGHFARE
25'	LOCAL STREET OR ALLEY	25'	45'
45'	MAJOR THROUGHFARE	25'	45'

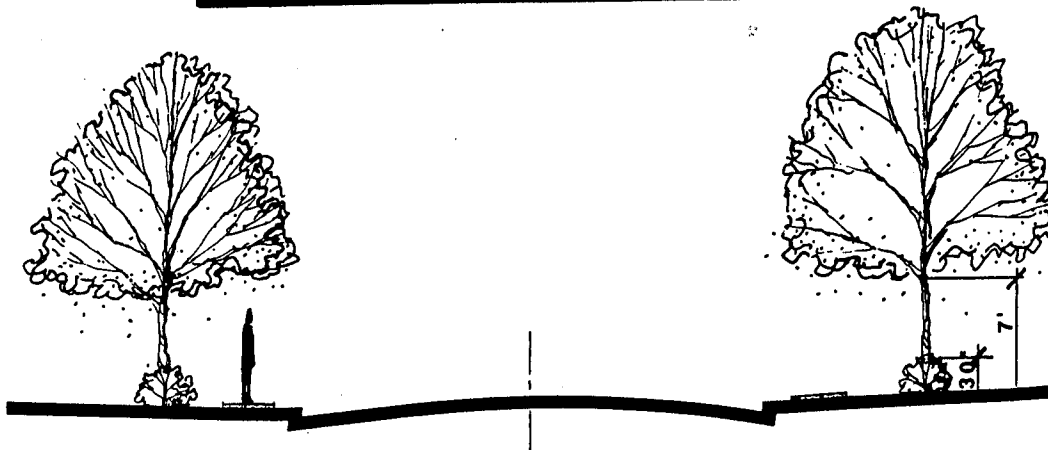
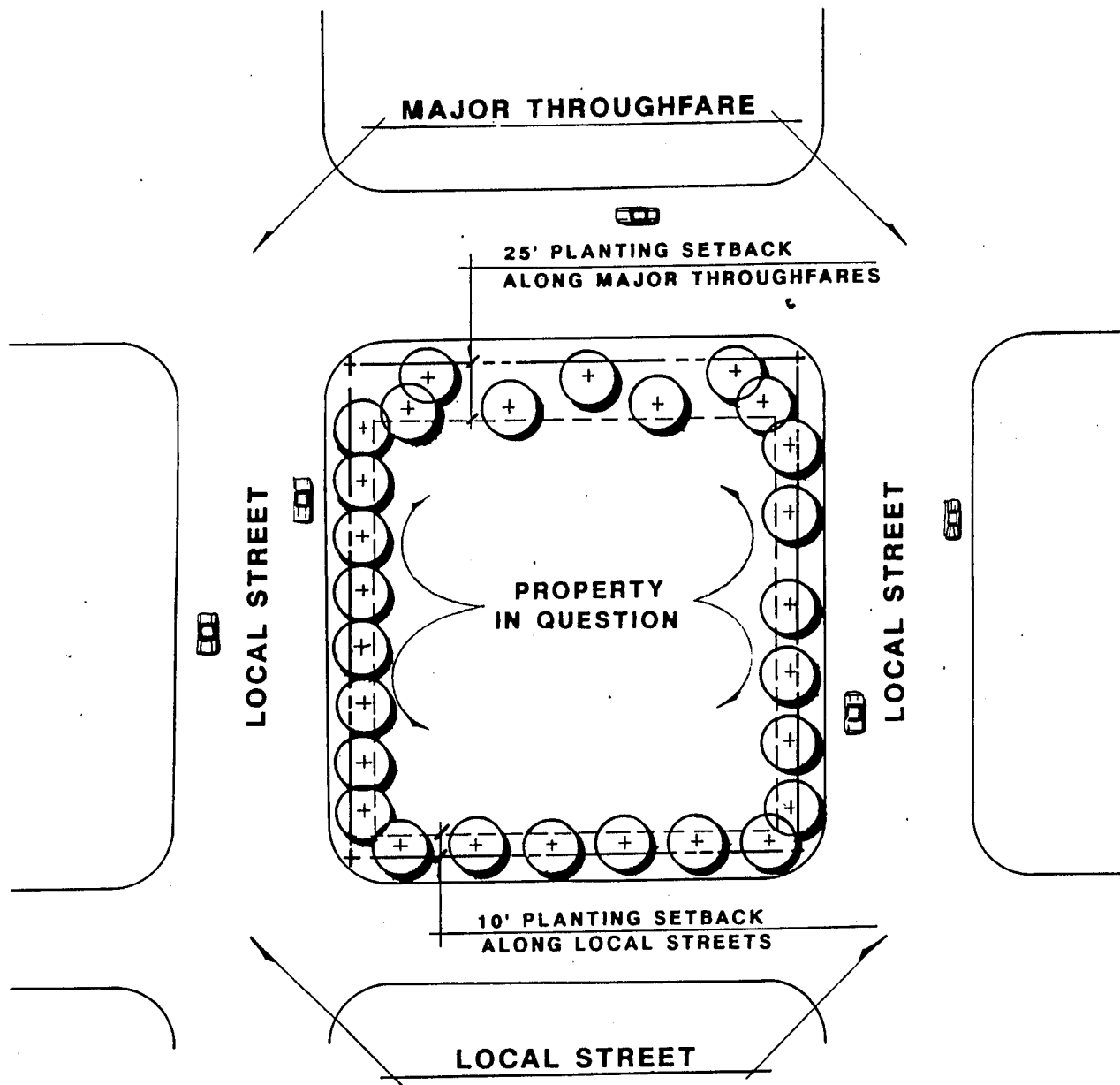


FIGURE B

Street Tree Planting



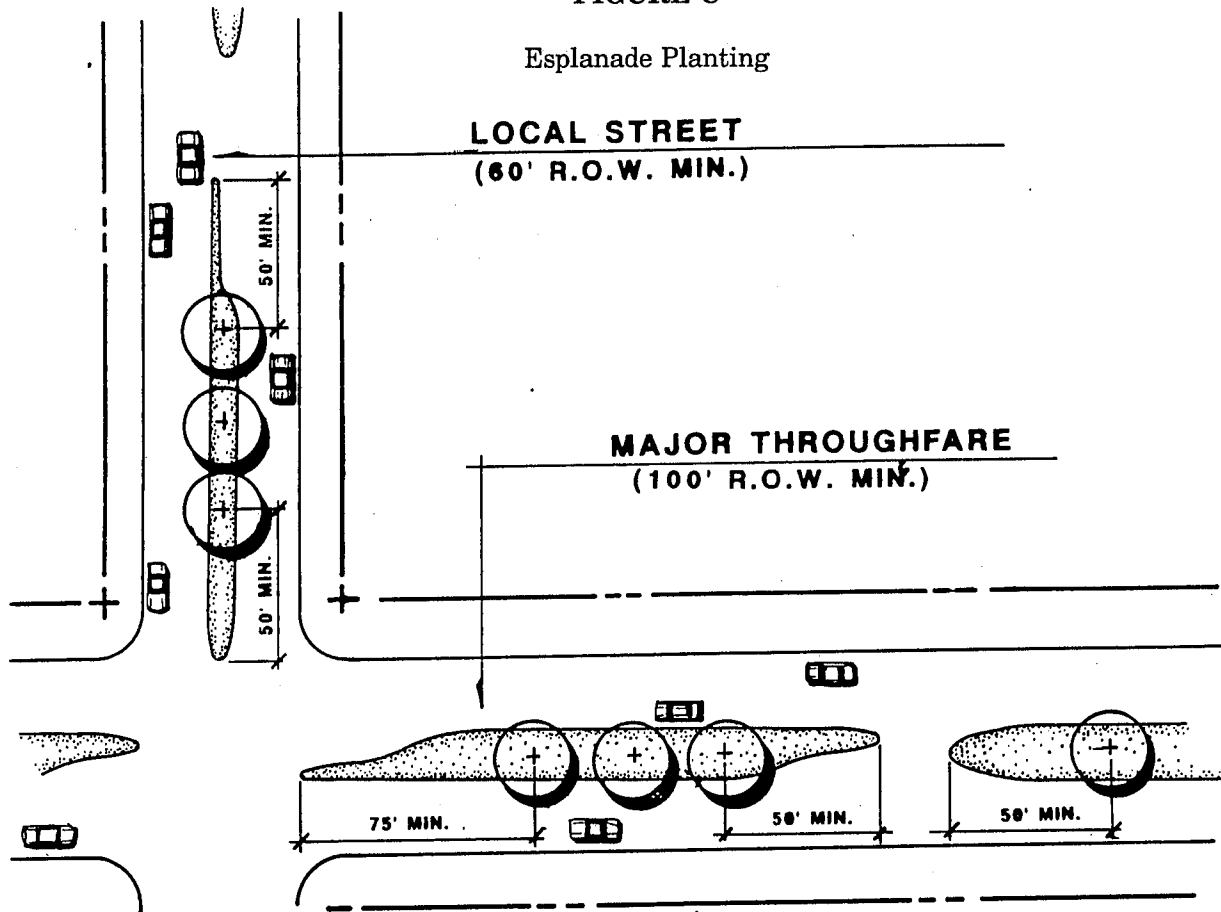
STREET TREE REQUIREMENT

SCALE: 1" = 60'-0"

FORMULA: TOTAL PROPERTY LINE
LENGTH ALONG LOCAL OR MAJOR
THROUGHFARES DIVIDED BY 30

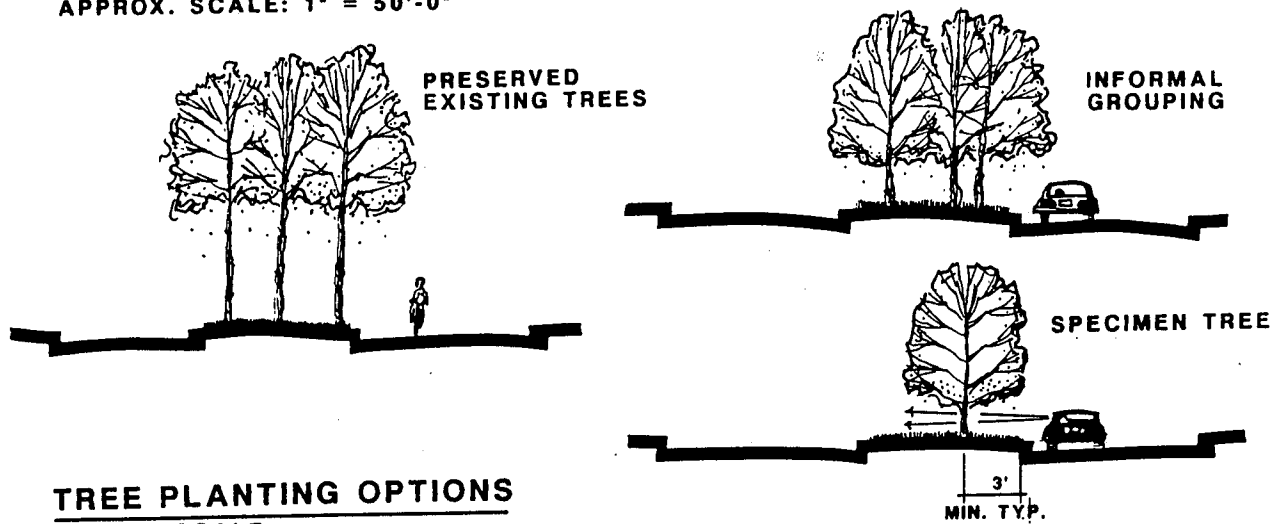
FIGURE C

Esplanade Planting



TREE LOCATION

APPROX. SCALE: 1" = 50'-0"

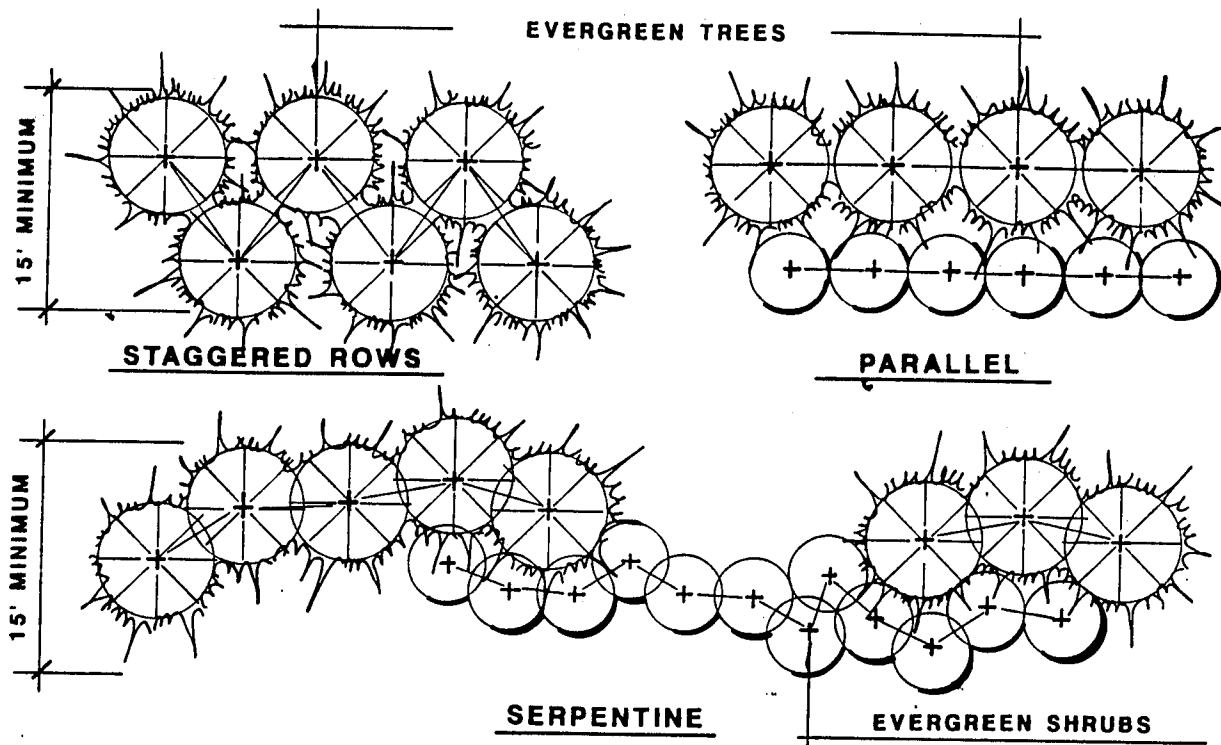


TREE PLANTING OPTIONS

NOT TO SCALE

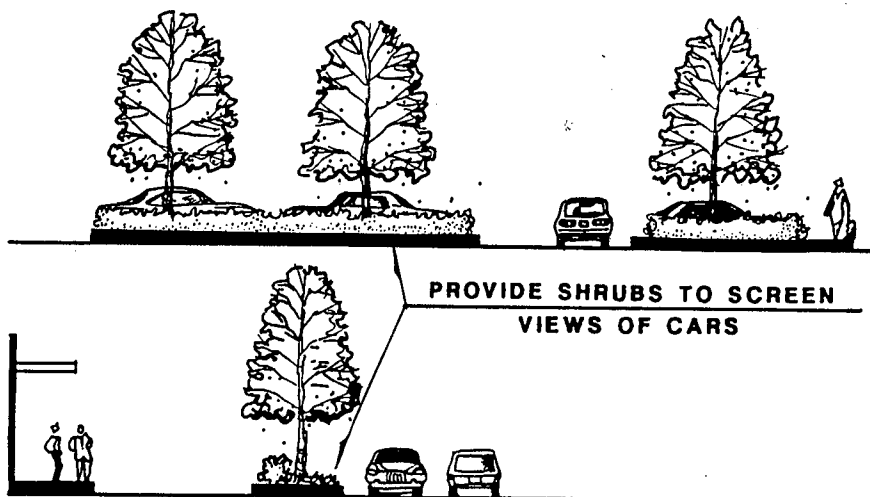
FIGURE D

Screening Evergreen and Parking



EVERGREEN BUFFER TECHNIQUES

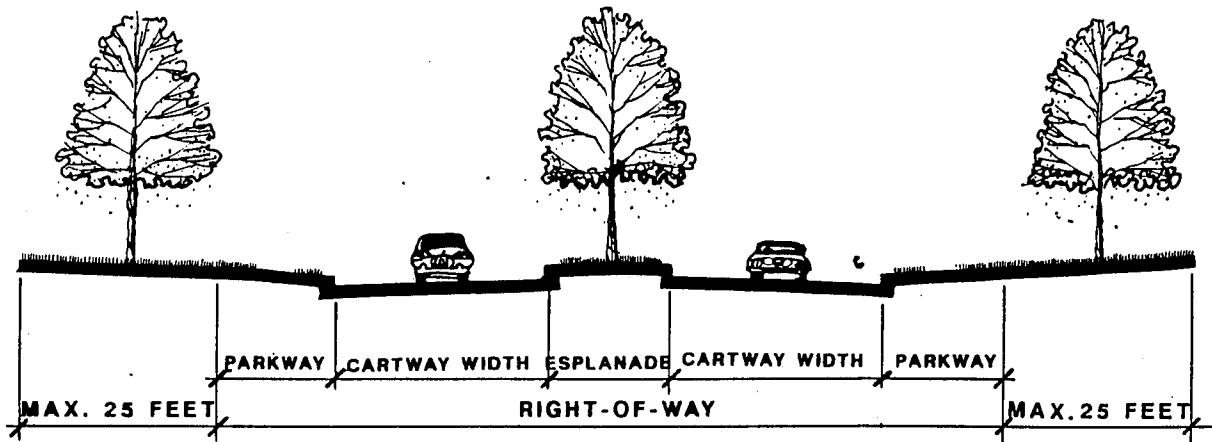
SCALE: 1" = 10'-0"



PARKING LOT SCREENS

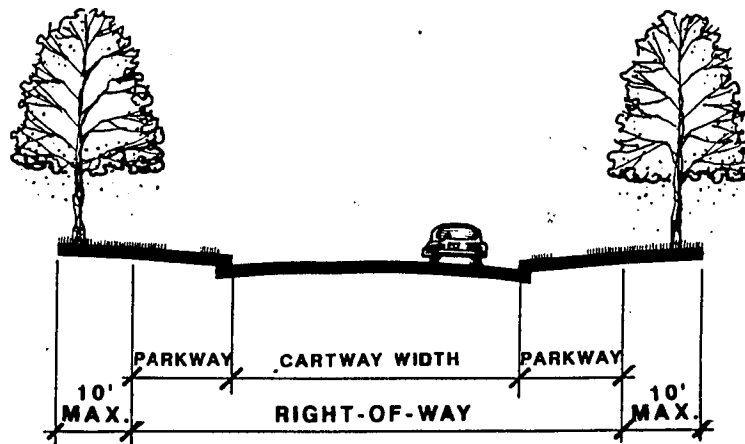
NOT TO SCALE

FIGURE E
Rights-of-way Profiles



MAJOR THROUGHFARE / DIVIDED ROADWAY

APPROX. SCALE: 1" = 20'-0"



LOCAL STREET

APPROX. SCALE: 1" = 20'-0"